

REMARKS

Claims 1-17, including new Claims 11-17, are pending in the application for the Examiner's review and consideration. Initially, Applicants affirm the election with traverse to prosecute the invention of Group I, directed at a method for purifying sulfuryl fluoride, upon which original Claims 1-9 are readable. Claim 10 stands withdrawn from consideration. Newly added Claims 11-17, which relate to a method for purifying contaminated sulfuryl fluoride, read on the invention of Group I.

By this amendment, Claim 1 has been amended to recite a purification method comprising a sorptive purification step wherein contaminated sulfuryl fluoride is contacted with an alkali metal fluoride and a sorbent. Support for the changes to Claim 1 can be found in paragraphs 10, 16 and 19 of the specification. New Claim 11 requires that the alkali metal fluoride and the sorbent are mixed together, and new Claim 12 requires that the alkali metal fluoride and the sorbent are separate from each other. Support for new Claims 11 and 12 can be found in paragraph 22 of the specification. New Claims 13 and 14 recites that the alkali metal fluoride and the sorbent form an adsorbent bed, and new Claim 15 requires that the contaminated sulfuryl fluoride is passed through the adsorbent bed. Support for new Claims 13-15 can be found in paragraph 23, example 1 of the specification. New Claim 16 requires that the contaminated sulfuryl fluoride is simultaneously contacted with an alkali metal fluoride and a sorbent. Finally, new Claim 17 requires that hydrogen fluoride, hydrogen chloride and sulfur dioxide are removed from the sulfuryl fluoride. Support for new Claims 16 and 17 can be found in paragraphs 19 and 22-23 of the specification. As no new matter has been introduced by these changes, they should be entered at this time. Favorable consideration and allowance are respectfully requested for Claims 1-17 in view of the foregoing amendments and the following remarks.

Claims 1-2, 7 and 9 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 4,406,825 to Pez et al. Claims 1-2 and 6 were rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No.

4,003,984 to Jones et al. Also, Claims 1-9 were rejected under 35 U.S.C. § 103(a) as allegedly obvious over Pez or Jones in view of U.S. Patent No. 4,950,464 to Fujioka et al. These rejections are respectfully traversed.

In order to establish anticipation under 35 U.S.C. § 102(b), **all** elements of the claim must be found in a single reference. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 USPQ 81, 90 (Fed. Cir. 1986), *cert. denied*, 107 S. Ct. 1606 (1987). In particular, as pointed out by the court in *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 USPQ 303, 313 (Fed. Cir. 1981), *cert. denied*, 469 U.S. 851 (1984), "anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference." In the present case, Pez and Jones fail to anticipate or render obvious a purification method comprising contacting contaminated sulfuryl fluoride with an alkali metal fluoride and a sorbent. Further, to establish a *prima facie* case of obviousness, **all** the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As discussed below, the combination of references fails to reasonably suggest a sorptive purification step consisting of contacting contaminated sulfuryl fluoride with an alkali metal fluoride and at least one sorbent.

The invention relates to a method for purifying contaminated sulfuryl fluoride. Contaminants such as hydrogen fluoride, hydrogen chloride, sulfur dioxide and organic impurities can be removed from sulfuryl fluoride by contacting contaminated sulfuryl fluoride with an alkali metal fluoride and at least one sorbent selected from the group consisting of activated carbon, silica gel and zeolite. Specifically, Claim 1 requires contacting contaminated sulfuryl fluoride with a combination of an alkali metal fluoride and at least one sorbent in a sorptive purification step.

Pez discloses that liquid sulfuryl fluoride (-111°C) can be pretreated by storage over dry potassium fluoride (KF) to remove undesirable HF therefrom (see column 11, lines 4-6). However, Pez discloses only the use of KF to remove HF. Pointedly, Pez is completely silent as to contacting sulfuryl fluoride with a sorbent, much less with an alkali metal fluoride and a sorbent, as required by

Claim 1. Further, Pez does not disclose or suggest contacting gaseous sulfuryl fluoride, as required by Claims 4 and 5¹. Thus, Pez cannot anticipate the claimed process.

Jones discloses a process for producing sulfuryl fluoride wherein as-synthesized sulfuryl fluoride is diverted through a tube filled with sodium fluoride tablets to remove HF (column 4, lines 15-19). Jones further discloses using a water scrubber (column 4, lines 62-63). However, Jones fails to disclose contacting sulfuryl fluoride with an alkali metal fluoride and a sorbent and thus cannot anticipate the claimed process.

Applicants note that the process of Jones uses an alkaline earth metal fluoride catalyst that can be impregnated onto an activated carbon carrier (column 1, lines 46-68 and column 2, lines 22-53). However, the alkaline earth metal fluoride catalyst of Jones is not an alkali metal fluoride, as claimed. The alkaline earth metal fluoride catalyst of Jones refers to a catalyst comprising Group II metals (Ca, Ba, Mg and Sr) (see column 1, lines 54-56 of Jones), while the claimed alkali metal fluoride refers to a Group I metal fluoride, such as potassium fluoride (see paragraph 11 of the instant specification). Further, the alkaline earth metal fluoride-based catalyst of Jones operates to provide a catalytic process for producing sulfuryl fluoride, **not** for purifying sulfuryl fluoride.

Fujioka discloses a process for purifying sulfuryl fluoride using adsorbent materials such as activated alumina or activated carbon (see abstract). However, Fujioka is completely silent as to an adsorbent comprising an alkali metal fluoride. None of the cited reference disclose a purification process that uses a combination of an alkali metal fluoride and at least one sorbent.

The Office Action alleges that the process of Fujioka can be carried out before or after the process of Pez or the process of Jones in order to further purify

¹ Claims 4 and 5, which require a contacting temperature of -20°C-150°C and 0°C-30°C, respectively, require contacting gaseous sulfuryl fluoride. Pez discloses only the purification of liquid sulfuryl fluoride. The boiling point of sulfuryl fluoride is approximately -57°C (see Jones at column 2, lines 15-21).

the sulfonyl fluoride. Applicants disagree with the reasoning set forth in the Office Action.

There would have been no motivation to combine the process of Fujioka with the process of either Pez or Jones. Pez, Jones and Fujioka each disclose purification processes that remove HF from sulfonyl fluoride. Moreover, Pez and Jones disclose processes wherein only HF is removed. In the process of Fujioka, HF can be removed using activated alumina. The activated alumina also removes additional impurities from sulfonyl fluoride such as thionyl fluoride, HCl and water. Because the process of Fujioka already removes HF, one with skill in the art would not have been motivated to combine the process of Fujioka with another process, which would add an additional processing step, in order to introduce additional media that removes only HF.

Even if Fujioka is combined with either Pez or Jones, the combination of these references fails to teach or reasonably suggest all the claim limitations. None of the cited references disclose or suggest a (single) sorptive purification step consisting of contacting the contaminated sulfonyl fluoride with an alkali metal fluoride and a sorbent, as required by Claim 1. As disclosed in the specification of the instant invention in paragraph 23, hydrogen chloride, hydrogen fluoride and sulfur dioxide can be removed from sulfonyl fluoride to undetectable levels by passing contaminated sulfonyl fluoride through an adsorbent bed comprising, for example, activated carbon and potassium fluoride.

Pez and Jones each disclose removing HF from sulfonyl fluoride using only a single sorbent and therefore cannot anticipate or render obvious Claim 1. Fujioka discloses treating contaminated sulfonyl fluoride with activated alumina and activated carbon only in discrete (i.e., sequential) steps (see column 3, lines 54-56 and column 6, lines 3-14 of Fujioka). There is nothing in any of the cited references to suggest contacting sulfonyl fluoride with an alkali metal fluoride and at least one sorbent in a single sorptive purification step. Accordingly, withdrawal of the rejection of Claim 1 is respectfully requested. Finally, Claims 2-9 and 11-17 depend from Claim 1 and thus are patentable over the cited references for at least the reasons that Claim 1 is patentable.

It is submitted that the difference between the claimed subject matter and the prior art are such that the claimed subject matter, as a whole, would not have been obvious at the time the invention was made to person having ordinary skill in the art.

In view of the foregoing, the application is respectfully submitted to be in condition for allowance, and prompt favorable action thereon is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #037110.52697US).

Respectfully submitted,

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